THE PROBLEM

1. To get the Samos program off dead center.

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FACTORS BEARING ON THE PROBLEM

2. Facts

a. 17 Nov 59 memorandum from Secretary Gates transferring Samos to the Air Force required:

(1) New development plan to emphasize physical recovery and provide for initial launch of recoverable payloads well in advance of the current schedule (early FY 62).

(2) Holding all steps beyond the current ARPA plan in abeyance pending specific approval from Office of Secretary of Defense.

b. New Development Plan, Development/Operations and Preliminary Operations Plans were submitted in February.

c. April 20 memo from Dr. York, replying to the 15 Feb Development Plan, stated:

(1) Samos program requires further adjustment: photo over ferret, recoverable photo over readout photo.

[redacted]

(3) Required AF to submit adjustments in accordance with paragraph a and b above.

d. The Under Secretary of the Air Force has withheld authority for the Air Force to spend $238,000 for "early fix" in the old Martin Bomber Plant at Omaha. Although he has never forwarded the directive, he has

indicated that he has one from DDR&E requiring this action. As a result this headquarters has directed termination of the contract.

e. The development plan, per se, has progressed far enough to provide a substantial amount of concurrency for an initial operational capability. Facilities that will be available from the development program include:

(1) A control center at Sunnyvale.

(2) Two tracking and acquisition stations (Vandenberg AFB and New Boston).

(3) Launch pads (perhaps the most critical item)

f. The Air Force possesses a substantial capability to exploit reconnaissance photography in facilities that have been developed over the years and not specifically for Samos.

g. Substantial opposition to SAC control of the system exists. Following enumeration of apparent reasons for this opposition gives an indication of its scope:

(1) Lack of trust on the intentions and professional competence, in photographic intelligence matters, of SAC and the Air Force.

(2) Fear that SAC and the USAF want to become the national intelligence center.

(3) A predominant feeling that Samos is national, or even international, in character thereby mitigating against control by the major U.S. deterrent force.

(4) Belief by other agencies that the USAF does not freely and openly share its existing intelligence materials.

(5) Jealousy of SAC.

h. Sub-system I is the subject of much criticism because:

(1) Its complexity is greatly increased by the ELINT requirement and serious questions exist about the state of the sensor art in this area.

(2) Its development has been based on estimates of the type of photographic or take that will be received, but serious doubts exist as to the validity of these estimates (Readout vs Recovery).

i. The Air Force, so far, has not adequately responded to guidance from DOD on priorities in the development program.

j. The Air Staff is divided on the question of possible wartime survivability and utility of the system. This question must be treated by a separate study.

[redacted]

l. General White has instructed the staff to get a program that will sell rather than lose it.

m. Other possible recoverable payloads are much farther along than the E-5, and appear to have possibly far greater potential for solving the basic cover problem and detailed cover than either the E-1, E-2 or E-5.

n. The authority and funds to build the Martin Bomber Plant facility does not expire at the end of the fiscal year.

o. The operational nature of a readout photo system will require frequent coordination between the operators and the agency that makes first phase interpretation of the film.

p. The operational nature of a recoverable photo system is such that frequent coordination between the operators and the agency that makes first phase interpretation of the film is not essential.

q. Photography of the USSR is of interest to many agencies, and since it is there are two separate and distinct steps in exploitation of any "take."

(1) Developing the primary film and providing duplicates to all authorized agencies.

(2) Interpretation and other uses of the duplicate copies by all agencies (SAC, ACIC, CIA, Army, Navy, AFIC, etc.)

3. Assumptions:

a. The operational photographic take from the first year's current readout R&D program will be inconsequential (SAC estimates 35 9 x 18 negatives per day of readout satellite operation).

b. No time phased estimates of take from repoverable packages is possible at this time because;

(1) The E-5, the only recoverable system in the current program, is not yet in the hardware stage and has three serious technical problems facing it;

(a) The lens will, if ground to present specifications, represent a 100% increase in capability over the best American industry has yet produced. The glass has only recently been delivered from Germany.

(b) The camera will take pictures which are backwards. North will be at the tops of the picture and south at the bottom. East and West will be reversed. In order to correct this confusing (to the PI) situation it will be necessary to print the picture backwards.

This results in substantial loss of resolution and never proved satisfactory in aircraft reconnaissance.

(c) The design of the camera does not provide for a rigidly fixed distance between the lens and film. A few microns of variation will destroy the focus, hence seriously degrade the resolution.

c. We cannot sell a facility in the Martin Bomber Plant for Samos at this time.

4. Criteria

a. Air Force plans for development and exploitation of Samos must be the very best that can be devised.

b. The Air Force desires to retain its basic concepts for Samos operations. Specifically the preliminary operations plan currently under consideration by the JCS should not be violated.

c. It is necessary to break the political log jam that has consistently caused the Air Force's executive agents in this program to spend more time revising development plans than in actually supervising development of the system.

d. The Air Force must obtain and retain support and approval of its plans for development of Samos.

e. Any steps taken to reorient the Samos program must be carefully examined for impact on the Midas program and the Midas program must be adjusted to prohibit slippages in an operational Midas system.

DISCUSSION

1. From the list of facts and assumptions it is apparent that Samos faces serious problems, both technical and political. The political problems have been magnified by high level disagreement on our technical approach. Further the Air Force has not been properly responsive to prior technical guidance.

2. Serious doubts of our planned primary dependence upon readout photography exist in the scientific community. Our operational system facilities were planned on the basis of the assumption that readout would prove satisfactory. Since this assumption is questioned most seriously, we are accused, perhaps justifiably, of leaping to conclusions supporting a grandiose operational program before we had any justification to do so.

3. The objections to SAC control has many facets. Since the first step in our plans for an operational system involve an interim data processing facility in the Martin Bomber Plant at Offutt, this step has been denied us. Our opposition can attack it on several grounds;

a. It is designed to expand into the center of our operational facilities, which are themselves questioned.

b. It will lead to complete SAC control of the system.

c. The R&D take foreseeable now will be too small to justify this action.

4. It must be recognized that the Air Force is not helpless in photo intelligence capabilities. So far as can be determined no complete study of existing SAC capability vs expected R&D take has been conducted, considering especially recent events. It appears that any attempt to obtain release of funds for an interim facility in the Martin Bomber Plant must

clearly show that the entire command workload is such that purely SAC exploitation of recoverable R&D take cannot be conducted within existing capabilities.

5. Since:

a. "Early fix" is recognized as the first step in establishment of a large SAC facility for control of the operational system;

b. The plans for operational system facilities are based on the assumption that readout will be the primary operational mode; and

c. The operational system required to operate and exploit readout systems are more elaborate than those for recoverable systems, the political and technical opposition to our present program is able to unite on this seemingly minor issue (only $238,000 is involved). This opposition is so formidable that we have been directed to withhold this facility, and from this one issue has stemmed most serious questions as to our technical and operational plans.

d. It is not vital to Air Force plans that the initial film processing and duplicating be conducted at the same location that SAC uses for exploitation of the photography. If subsequent studies of this problem indicate that other facilities can do the processing and duplicating job better, the Air Force should not object to their being utilized.

e. Colocation of data handling and dense control centers is not essential if recoverable systems are the only ones used. However, readout systems probably will require this. This does not address the obvious requirement for exploitation facilities to be immediately available for

SAC Hqs. Since SAC Hqs does have a targeting problem requiring Samos data, a data handling capability must exist there. Therefore, one could state that if the control center is finally located at SAC, there is an urgent requirement for colocation of the data handling and control centers.

CONCLUSIONS

1. The Air Force must be responsive to technical directives and develop the best possible program.

2. An open-minded approach to the R&D program and the operational facilities required will be extremely difficult for the scientific community to challenge.

3. The Air Force should not insist on an interim facility in the Martin Bomber Plant at this time at the risk of further complication in the program, particularly until it is proven that current facilities are not adequate. This is especially true since it is politically unpalatable.

4. The following items are necessary before we can defend any firm position on additional exploitation facilities requirements:

a. Comprehensive review of current exploitation facilities available to the Strategic Air Command.

b. Current command workloads.

c. Best possible estimates of R&D take (these can be based only on a new development plan, not on existing schedules).

5. Questions of the utility of the Samos system in general war must first depend on the degree of survivability that can be provided. If survivability is possible, other operational factors must be considered -- factors such as; reliability, flexibility, competing systems, etc.

6. Concurrency built into the development plan gives a substantial capability to exploit either a readout or recoverable system.

7. Any delay in the Martin Bomber Plant facility has serious implications in the Midas program since the Sunnyvale facility cannot handle the display generating equipment.

8. Interim facilities for processing and duplicating the primary record photography and supplying all users must be made available. Further study of the final answer for the processing and duplicating facilities must be conducted.

RECOMMENDATIONS

1. That the Air Force support the directives that we have received requiring payload development in the following order: recoverable payload, readout payload, ferret payload.

2. That the Air Force adopt a completely open mind on the Midas program and the subsequent facilities required for an operational system.

3. That reconsideration of the hard vs soft problem begin with a technical study of the problem of giving the system survivability.

4. That the Air Force defer any move to establish an interim facility at Offutt until we have more facts on which to base our claims.

5. That consideration be given to the NORAD complex in Colorado as a strong possibility for location of the Midas display generating equipment.